USAID
FROM THE AMERICAN PEOPLE

INDUSTRIAL MANAGEMENT PROJECT

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ANNUAL REPORT: January 13, 2013 – December 31, 2013

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Abbreviations and Acronyms

ATF	Access to Finance
CEED	Center for Entrepreneurship and Executive Development
CEIP	Clean Energy Investment Project
DPM	Deputy Prime Minister
EBRD	European Bank for Reconstruction and Development
EMS	Energy Management System
ESCO	Energy Service Company
FI	Financial Institution
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoM	Government of Macedonia
IMP	Industrial Management Project
ISO	International Organization for Standardization
ktoe	kilo ton oil equivalent
LAN	Local Area Network
LEC	Local Engineering Company
OECD	Organization for Economic Cooperation and Development
REC	Regional Environmental Center
SME	Small and Medium sized Enterprises
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
USG	Unites States Government
VAT	Value Added Tax

1 EXECUTIVE SUMMARY

Activities carried out by the Industrial Management Project (IMP) this year took place in the context of a slow global economic recovery and still fragile economy. The industrial sector was no exception. The excessive energy costs incurred due to inefficient energy use significantly affect the competitiveness of industrial products on domestic and foreign markets. In 2010 the total final energy consumption in the industrial sector in the country was 546.5 ktoe with following distribution: electricity 32.2%, solid fuels 19.5%, oil products 31.5%, natural gas 5.5%, biomass 0.6% and heat energy 10.8%. The industrial sector consumes about a third of the national energy balance, participates with more than 28% in GDP, and employs more than 30% of the total employees in the country.

As result of outdated and inefficient technologies in companies, the national economy is considered as one of the most energy intensive economies in Europe. The national statistics show that the final energy consumption per capita in Macedonia in 2010 was three times lower compared to the consumption in the OECD (Organization for Economic Cooperation and Development) countries, whereas the consumption of primary energy per unit Gross Domestic Product was almost four times higher. On the demand side, the key challenge is to improve the efficiency of energy usage, which has been held back by below-market pricing for all but the largest users. On the supply side, challenges include the limited range of options for energy supply due to country's lack of oil, gas, or high-quality coal reserves, and aging generation facilities. These factors have resulted in a shortage of domestic generation capacity, as well as relatively inefficient facilities.

With the upcoming liberalization of electricity market in the country, the industrial production companies would face with the fact that the energy use is critical for their competitiveness on the open market, and even for their survival. Taking into account the high variability of prices and the severe competition on regional and European markets, the industrial companies need to carefully analyse their energy consumption practices. The situation can be improved by reducing companies' internal operation costs, whereas significant results can be achieved by improved management and more efficient energy use.

USAID launched the Industrial Management Project to help industrial companies address energy efficiency in their production plants in a systematic and sustainable way founded on ISO 50001 principles. The overarching goals of IMP are to improve country's competitiveness and energy security and simultaneously reduce greenhouse gas emission. The overall IMP objective is to introduce the principles of energy management to selected Macedonian industries based on ISO 50001 standard as a guideline.

After the project inception, a project team was mobilized and the project office established. In order to promote the project, increase visibility, entice interest with business sector and finally select candidate pilot companies to implement Energy Management Systems in their production plants, IMP established direct relationships with four groups of stakeholders: 1) Equipment Vendors; 2) Chambers of Commerce and Associations; 3) Media; and 4) Potential Industrial Companies.

IMP conducted an open, comprehensive and transparent process for selecting candidate pilot companies. In the inception phase, IMP carried out an in-depth analysis of statistical data regarding current energy consumption specifics and trends as well as an overview of several specific

macroeconomic indicators of the industrial sector in Macedonia. The analysis included a total of 10 industry (sub)-sectors following the Macedonian National Classification of Activities of the State Statistical Agency. The findings and conclusions of the analysis were presented in the "Industry Analysis Report". The selection process included preparation and distribution of a questionnaire distributed through organized presentation events at the Chambers of Commerce as well as direct contacts to companies. A group of 53 companies represented their interest for participation in the project by responding to the questionnaire and providing basic, though sufficient, information for further assessment.

In parallel with selection of candidate pilot companies, IMP conducted a comprehensive and transparent step-by-step process to select credible equipment vendors that offer an integrated quality and proven solutions for Energy Management System in pilot companies. As result of the vendor selection process, IMP selected 2 equipment vendors out of 10 equipment vendors and system integrators that were invited. The selected equipment vendors are Schneider Electric and Loging Electronics (representing Janitza EMS) that responded to the request for clarifications as a final step for selection and met the criteria of the project for EMS implementation.

IMP engineers and industrial experts conducted on-site walk-through audits at candidate companies that expressed interest. Most of the project time in the first year was spent on selection and discussing with interested companies with the follow on detailed on-site scanning of energy infrastructure and requirements for EMS implementation at candidate companies. The project engineers worked closely with technical representatives from candidate companies to develop detailed specifications and cost proposals. Total of 17 companies received project plans and cost specifications out of which 7 companies concluded contracts for EMS implementation with USAID cost-sharing support.

Picture 1: EMS installation in pilot company Alkaloid AD Skopje

While performing on-site activities the engineers' team concluded that most screened companies own out-of-date power distribution network built 30 to 40 years ago and generally utilize old equipment. About 60% of selected candidate companies do not have any local area network, which is necessary for EMS operation. Such conditions increase EMS investment cost in companies. Moreover, all screened companies lack technical project documentation for existing and running power distribution networks, installed equipment and for the overall present condition. Therefore, extra team effort was invested to prepare technical solutions that include detailed scope of work for EMS implementation.

IMP established close cooperation with the UNIDO team that is expected to start a similar industrial energy efficiency project in Macedonia in May 2014. In early October 2013, IMP and UNIDO conducted a two-day joint workshop where 27 participants representing 20 non-participant industrial companies attended the training. The representatives were trained on energy management principles and ISO 50001 standard including development of energy information and plans, presentation of energy metrics and energy performance indicators, discussion of management commitment, checking, management review and project planning, and presentation of energy management systems from selected EMS vendors. The workshop was well received by the trainees.

IMP organized a one-day workshop for financial institutions on energy management practices in industrial companies. The training was held in CEED premises at the end of October 2013. Representatives from three financial institutions participated on the workshop. The trainees were FI's employees who are directly involved in processing clients' applications for access to finance aimed for energy efficiency upgrade projects. The training covered EMS concepts and ISO 50001 principles, discussed opportunities for project financing aspects on energy management and energy efficiency improvements in industrial companies, as well as established relationship with financial institutions as potential clients to IMP's pilot companies.

The outreach component used a variety of communication and outreach tools, including holding public events and workshops, producing and disseminating information via promotional materials and interviews. Press releases and press clippings about IMP's work when applied were regularly submitted to USAID. The outreach component was further strengthened by other marketing activities such as the broadcasted Nova TV Profit series on IMP and the published interview in the Economy and Business monthly magazine. In addition, IMP organized a joint launch event with CEIP in early December 2013. This event was opened by the US Ambassador HE Paul Wholers followed by DPM Mr. Vladimir Peshevski and the Minister of Economy Mr. Valon Saraqini. More than 120 participants were hosted on the event. The event helped raising interest to industrial companies while raising public awareness about energy management approaches, activities and achievements.

IMP has defined the sustainability aspects of the project. The project sustainability, from a project context, was defined as continuation of valued benefits following the completion of the project. IMP sustainability has several dimensions, as follows:

- *Reproduction of project results.* Once adopted by an organization/industry should represent a continuing activity, i.e. part of the organization's standard production-related practices. Thus, by giving specific focus and importance to this aspect throughout the implementation of the project as well as by catalyzing the principles and disseminating the benefits of EMS, pilot companies should expand on implementing energy management best practices on continuous basis.

- *Replication of EMS and EE best practices.* By implementing Energy Management Systems and EE improvement measures in pilot companies as leaders in respective industries, other companies would learn from their experience proved by positive results: decreased energy consumption and reduced energy bills. Therefore, IMP would 'create demand' for energy management services in the country.

- *Continuation of training program.* IMP is developing a training program for Energy Management systems and ISO 50001 methods and principles. This training program should be utilized for continues coaching, mentoring, and consulting that drive business growth.

The IMP highlights by components are shown in the table below.

Table 1: IMP Highlights by Component

Component	Key Activities	Outcomes
Industry Selection	• Prepared promotional materials prepared and disseminated by the project team • Established close cooperation with three chambers and commerce, organized two joint events and participated on several other follow-on events • Conducted Industrial Analysis based on statistical data – energy indicators and energy balances in Macedonia which resulted in high, medium and low priority industries • Disseminated information on ISO 50001 standard and Energy Management Systems best practices through various channels including media events, seminars, and direct contacts with industrial companies	• Project office established • Initiated dialog and networking among industries and associations on energy management through three chambers of commerce • Obtained commitment and initial support from project stakeholders • Selected (prioritized) 7 industrial subsectors to become part of consequent project activities • Selected a pool of 53 industrial companies for as potential project beneficiaries • Energy management (ISO 50001) concept and benefits disseminated to more than 100 industrial companies
Demonstration Projects	• Conducted equipment vendor selection process • Conducted on-site surveys and prepared 17 detailed EMS cost specifications • Initially analyzed 13 candidate companies that expressed interest for cooperation	• Selected 2 prime equipment vendors out of 10 candidates • Contracted 7 industrial pilot companies for EMS supply and installation with USG cost-shared support • Started EMS procurement and installation services at 7 pilot companies
Training and Sector Development	• Conducted selection process for local engineering companies to participate in IMP training	• Selected 2 local engineering companies to receive training and practical experience on energy management project preparation, installation and maintenance out of 16 candidate companies • Increased capacity for energy management development of local service providers
Promotion	• Established cooperation with UNIDO • Selected and invited 58 industrial companies for joint training • Invited 6 financial institutions for training • Organized a joint launch event with CEIP project • Promoted project opportunities to several events • Published interviews and participated on media broadcasting to discuss IMP	• Conducted a two-day USAID-UNIDO workshop on ISO 50001 standard and EMS best practices to 27 participants representing 20 industrial companies • Conducted a one-day training to 3 financial institutions on industrial energy efficiency opportunities for financing and on-lending practices including project financing modalities • Increased awareness for industrial energy management

2 BACKGROUND

The Macedonian energy sector is in a transitional phase from a centrally planned and managed structure to a decentralized, regulated free market. On the demand side the key challenge of the country's energy sector is to improve the efficiency of energy usage, which has been held back by below-market pricing for all but the largest users. On the supply side the challenges encountered include limited range of options for energy supply – due to country's lack of oil, gas, or high-quality coal reserves – and aging energy generation facilities. Recent reforms are helping to address these issues, and the country is committed to further reforms to bring about the full liberalization of the energy market.

Industrial manufacturing companies in Macedonia are quickly coming to the realization that energy and sustainability issues are a critical requirement for the competitiveness and even survival of their businesses. Using one third of all the energy consumed in Macedonia on an annual basis, with high price volatility and stiff regional and EU competition for market share, Macedonian industries need to better understand their energy consumption patterns and adopt organizational capabilities to better manage its use. It has become not only a company-specific issue, but a national imperative as well.

The use of energy management systems in Macedonian industry is important – on one hand, due to increasing energy costs – and on the other hand, due to efforts to sustain the competitive edge and concur new markets. Energy efficiency in production, in particular, helps companies increase productivity in their plants, which in turn improves their competitiveness in all sectors. Inclusion of well-structured energy management system as a systematic approach to track energy use and reduce costs will help industrial production plants in maintaining or increase their market share on domestic or regional markets.

With the aim to improve Macedonia's competitiveness and energy security and reduce greenhouse gas emissions via greater clean energy investments, the USAID initiated the three-year Industrial Management Project. The project commented on January 13, 2013. The implementation of the IMP is managed by TimelProekt, as a Prime Contractor to the USAID, with PointPro Consulting and the Center for Entrepreneurship and Executive Development (CEED) as implementing Partners.

3 INTRODUCTION

The underlying IMP objective is to introduce Energy Management Systems in 17 industrial pilot companies and further assist 6 pilot companies by providing technical expertise and access to finance for implementing energy efficiency upgrade projects identified based on EMS measurements and tracking energy. The EMS is a combination of software, data acquisition hardware, and communication systems to collect, analyze and display energy-related information to aid industrial energy managers, facility managers, production and financial managers in reducing energy use and costs in industrial plants. This technology helps perform key energy management functions such as organizing energy use data, identifying energy consumption anomalies, managing energy costs, optimizing energy demand, and build strategies for efficient and timely respond to anomalies.

EMS provides the following capabilities: collect and archive facility energy data, and visualize data in a meaningful fashion. It also enables companies to facilitate energy benchmarking, optimize energy procurement, and manage overall energy costs.

Once EMS is installed, the first step is understanding how much power a piece of equipment or a plant is consuming. The electric bill is not going to provide the level of detail required. Advanced power meters are installed, as they provide accurate real-time system values, and capture waveforms and power quality events to add intelligence and save costs. Meters identify the harmonics, voltage fluctuations, transient over-voltage conditions and other conditions, while also capturing power and energy data from equipment.

Meters keep a continual log of electrical parameters including volts, amps, watts, kilowatt-hours and power factor. Typically, meters are installed at the largest loads or so called significant energy users. Critical loads are also typically metered.

Power quality meters are first installed at the service entrance to establish the overall baseline and data points. This provides information on both the quality of the power the utility is delivering and the amount of power consumed. If there is a discrepancy between the utility charges and what is consumed, actual consumption can be demonstrated to the utility along with power quality data.

Telecommunication network along with intelligent protocols (modbus, profibus) and network communication technologies (RS 485/ RS 232, Ethernet, Wireless) are then used to collect energy and power data. The data is stored on a web-client server where a software system is installed to collect real-time data and generate custom-made reports, alarms and custom graphical representations of the monitoring system.

The complete, web-enabled, energy management solution for industrial operations helps to:

- Cut energy-related costs, avoid downtime and optimize equipment utilization
- Track real-time conditions, analyze power quality, and respond quickly to critical alarms
- Study historical trends to reveal energy waste or unused capacity
- Verify efficiency improvements and allocate costs to buildings, departments or processes
- Manage intelligent metering and control devices

- Provides a unified interface to display electricity and other consumable resources such as water, compressed air, gas or steam
- Automatically collects and stores data from key electrical distribution points
- Provides control capabilities that can be used to manage demand, power factor, loads, generators, etc.

The overall integrated system allows facility managers to collect power and other energy data from a variety of equipment and access that information from a single point. All energy-related information is then stored on a server with an installed software package which uses a database to store data. Predefined reports are also transmitted to other company users at certain time (for example, by use of e-mail communication).

EMS provide metering of all electrical units by feeders as well as metering non-electrical units in real time where needed and data transfer to a server with installed software package. By metering and displaying energy consumption data by feeders or group of feeders it is possible to generate an overview of energy consumption and loads, comparison between planned and actual energy consumption, energy consumption reduction after implementation of energy efficiency improvement measures as well as organizational measures with actions taken by industry production personnel.

The figure below shows a typical configuration of an energy management system that IMP implements in industrial pilot companies.

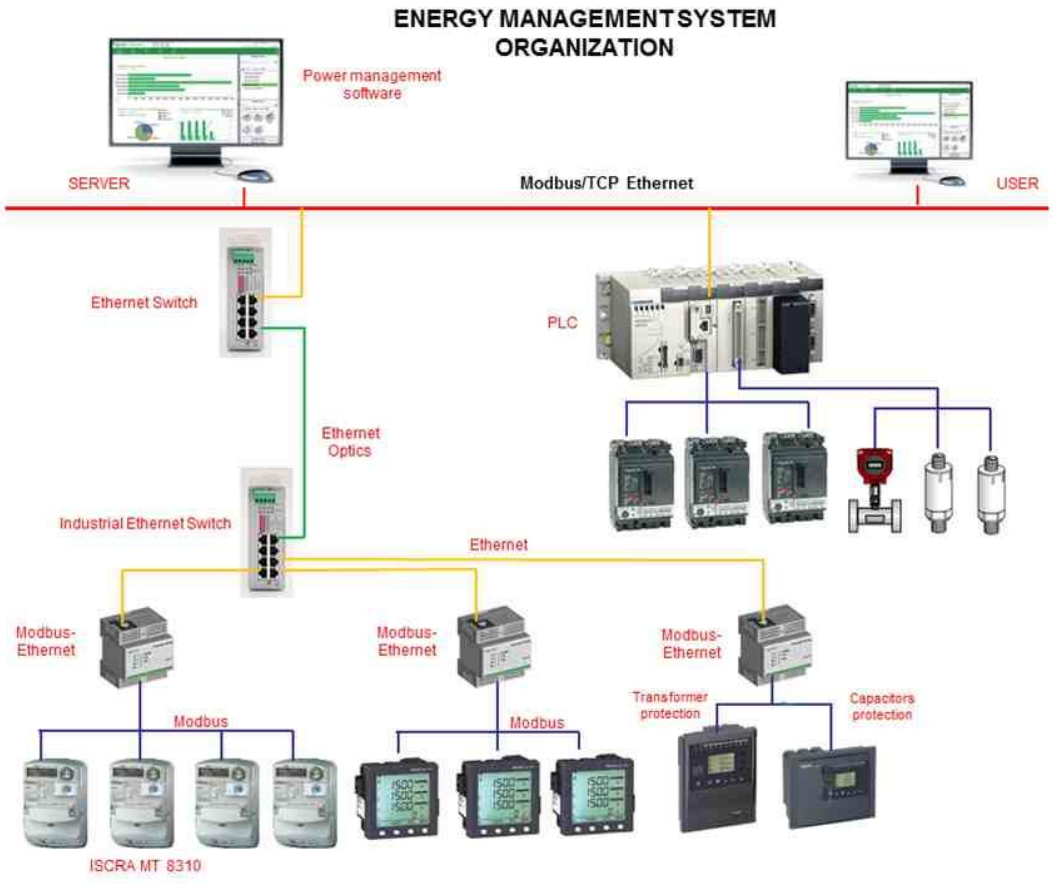


Figure 1: Typical Energy Management System Configuration applied at IMP Industrial Pilot Companies

4 OBJECTIVES AND APPROACH

4.1 Objectives

The USAID funded Industrial Management Project (IMP) is designed to support the USAID/Macedonia's primary objective 1.3 "Increased Job-Creating Private Sector Growth in Targeted Sectors". More specifically, the IMP activities are directed toward the accomplishment of the intermediate result IR 3.2. "Key Private Sector Capacities strengthened" and the Sub-IR 3.2.1. "Private Sector Producing Globally Competitive Products and Services" and include the following interventions in the energy sector as set forth in the USAID/Macedonia Strategic Plan 2011-2015:

- Domestic and foreign investment will expand;
- Exports from targeted competitive, value-added industries will rise;
- Employment in targeted sectors will grow;
- Business support organizations will offer new services;
- Macedonia will comply with the Energy Community Treaty; and
- Energy efficiency and renewable energy interventions will increase employment, investment, and new technology, and will reduce energy demand.

Ultimately, these interventions will lead to improvement of country's competitiveness and energy security and will simultaneously contribute to reduction of the greenhouse gas emissions.

Figure 2 below shows the IMP Results Framework.

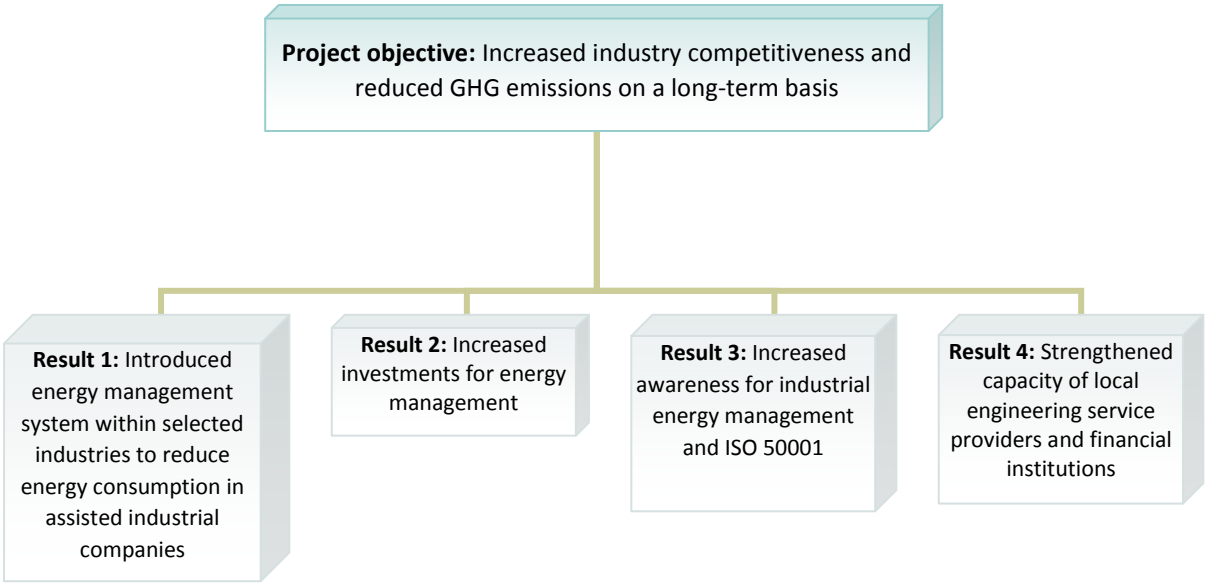


Figure 2: IMP Results Framework

The project defines the implementation framework that consists of two primary vertical tracks:

1. Increased industry competitiveness through reduced production (energy) costs, and
2. Reduced GHG emission on a long-term basis.

Furthermore, the project has four cross-cutting, horizontal tracks which contribute within the goals of the verticals, as follows:

1. Introduced energy management system within selected industries to reduce production (energy) cost in industrial companies;
2. Increased investments for energy management and energy efficiency improvements;
3. Increased awareness for industrial energy management and ISO 50001 principles;
4. Strengthened capacity of local engineering service providers for energy management systems and financial institutions for investments in industrial energy efficiency upgrades

4.2 Approach

The four major components of the IMP are: (1) Industry Selection; (2) Demonstration projects; (3) Training and Sector Development; and (4) Outreach. The primary beneficiaries of IMP are small and medium sized industrial enterprises (SME), with industrial business associations and financial institutions as secondary groups of beneficiaries. Other beneficiaries include energy utilities and NGOs. The Project aspires to cover as many of the country's regions and industrial sectors as possible.

The IMP approach is targeted towards energy consumption reduction using a systematic and sustainable way founded on ISO 50001 principles and methods. The industrial energy management is the practice of using energy more efficiently and effectively in industry's operations. Energy management provides an opportunity to optimize energy costs by understanding energy flow as well as procurement and economics of energy, and reduce its harmful impact on our environment. It is an ongoing process and must be reviewed at regular intervals and fine-tuned as required, from time to time.

The implementation of the project objectives is being accomplished by project team's approach that integrates the following key steps:

1. Introduction of Energy Management Systems (EMS) in industrial pilot companies from various industrial branches in the country. The management team and technical staff in pilot companies will receive training on the guidance, requirements and application of the ISO 50001 Energy Management Standard. Pilot projects for monitoring energy consumption by various energy types will be developed in cooperation with pilot companies. Relevant energy management systems will be installed and put into operation at the pilot companies. Designated energy managers from pilot companies will be trained on the use and maintenance of the installed system. The implementation of the energy management systems will be financed on a cost-share basis (50% of the overall cost or not more than $20,000) while pilot companies will cover the remaining cost.

2. Development of energy audits, project designs and implementation of energy efficiency projects in pilot companies. The energy efficiency projects will be implemented based on the collected data and system operation monitoring. IMP will also provide expert support for project financing by presentation of the EE projects to local financial institutions.

3. Provision of training of non-participant industrial companies from various industrial branches. The training will be carried out through several workshops. The companies will receive materials where, in addition to the educational part, information on the operation of and results obtained from introduced energy management systems will be also provided.

4. Provision of training for qualification of local engineering companies for development, installation and maintenance of energy management systems. The training will be carried out primarily on site at pilot companies for development and installation of the energy management systems.

5. Provision of training of local financial institutions on the needs and benefits of financing industrial energy management systems and EE development projects.

Project structure

Figure 3 shows the IMP organizational structure and project partners as a framework for successful project implementation.

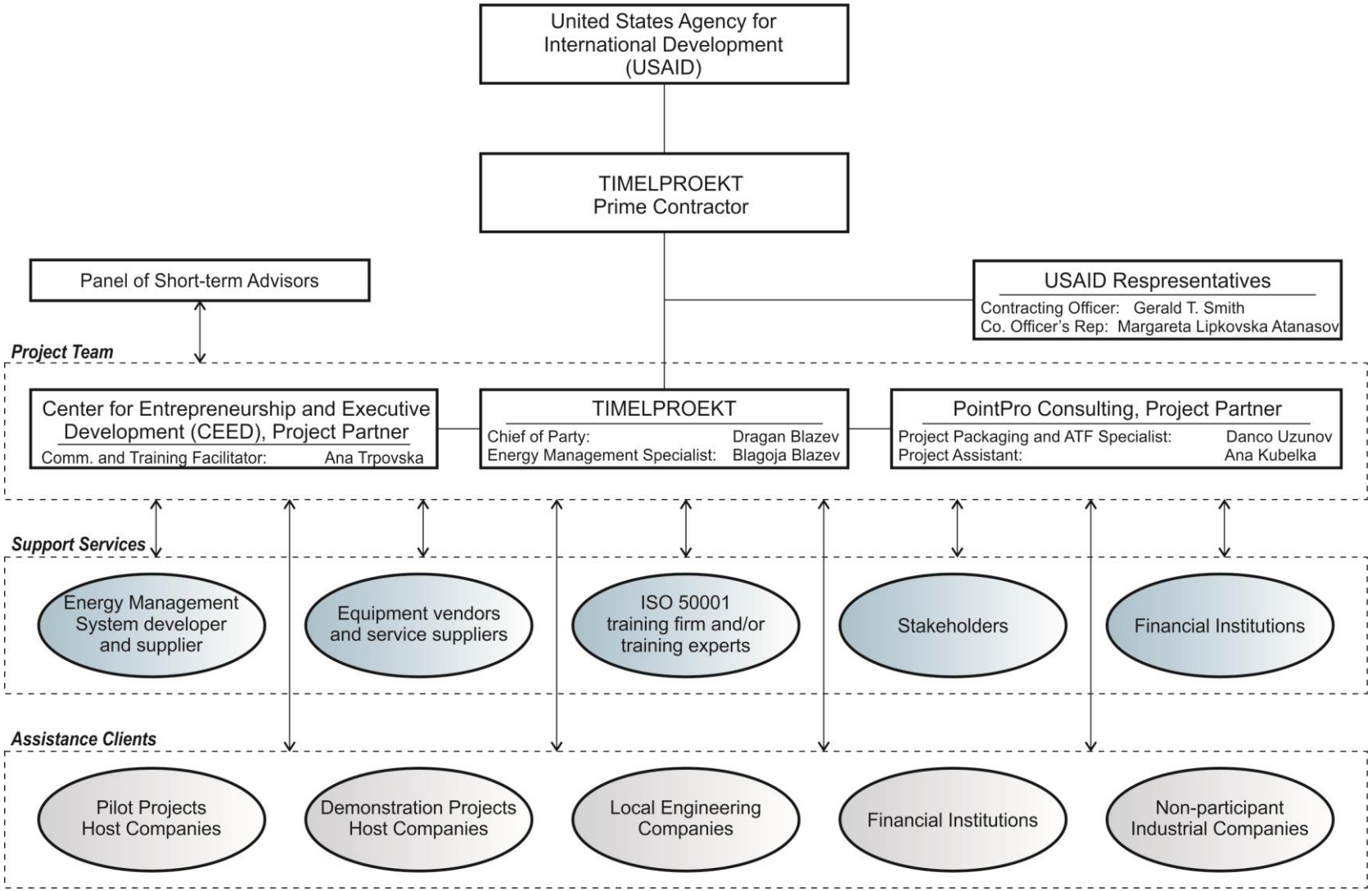


Figure 3: IMP Organizational Structure and Project Partners

5 ACCOMPLISHMENTS AND ACTIVITIES BY COMPONENTS

The four major components of the IMP are: (1) Industry Selection; (2) Demonstration Projects; (3) Training and Sector Development; and (4) Outreach.

This section provides an overview of key activities and accomplishments per component in the first implementation year.

5.1 Industry Selection

5.1.1 Initial Outreach

After the project inception, a project team was mobilized and the project office established. As an initial step, the project team prepared IMP promotional materials that were further disseminated on meetings and events.

In order to promote the project, increase visibility, entice interest with business sector and select candidate pilot companies to implement Energy Management Systems in their production plants, the project team established direct relationships with four groups of stakeholders: 1) Equipment Vendors; 2) Chambers of Commerce and Associations; 3) Media; and 4) Potential Industrial Companies.

5.1.2 Equipment Vendors

IMP conducted a comprehensive and transparent step-by-step process to select credible equipment vendors that offer an integrated quality and proven solutions for introduction of Energy Management Systems in pilot companies. Considering that the EMS concept in industrial companies is new to the country, the IMP's objective was to select equipment vendors that offer quality equipment and software package and that are able to provide an integrated solution with close technical support by IMP engineers. The local presence of equipment vendors and their system integrators capable to support IMP from the development of a conceptual design through equipment supply and installation to dealing with troubleshooting and final commissioning was critically important in the selection process. Another important aspect was the ability of equipment vendors to offer technical support and maintenance including training of industrial personnel for the secure operation of the energy systems.

Based on market research and knowledge of availability of equipment vendors present on the local market or their representative offices, IMP invited several established and well-known companies to express interest. Equipment vendors that expressed interest are as follows:

1) ABB Representative Office Skopje
2) ABB Representative Office Bulgaria
3) ISKRA ATG Skopje
4) Schneider Electric Representative Office Skopje
5) Loging Electronics, Skopje (Representative Office of Janitza EMS)
6) Siemens Representative Office Skopje
7) Siskon, Siemens system integrator, Skopje

8) Nalco Systems, Siemens system integrator, Skopje

9) Menerga Skopje, Representative Office of Menerga Slovenia

10) EnergySolutions CSG, Representative Office in Skopje

Based on submitted documents and screening criteria, two equipment vendors were selected: Schneider Electric; www.schneider-electric.com and Janitza; www.janitza.com (represented by Loging Electronics, a local company). Both equipment vendors met project criteria and offered energy measurement systems with multilevel measuring devices supported by Ethernet (TCP/IP) and other protocols used as the backbone for data communication. The selected measuring devices with Ethernet/Modbus gateways and master/slave architectures ensure efficient systems with high transparency. Both vendors have in-house developed and tested professional software architectures that provide an integrated solution for industrial facilities in the country and could be customized based on specific production processes and requirements. Both companies ensured high quality standards and know-how in offering sustainable energy management solutions to industrial plants.

5.1.3 Chambers of Commerce

From the very beginning, IMP established close cooperation with the three chambers of commerce in Macedonia with an objective to reach out to industrial member companies, disseminate information and entice interest for project participation. IMP conducted meetings with the management boards at all three chambers of commerce and discussed project objectives and linkages to member companies. The chambers of commerce included:

- Economic Chamber of Macedonia;
- Macedonian Chambers of Commerce; and
- Economic Chamber of North-West Macedonia.

Picture 2: Presentation of IMP in Economic Chamber of Macedonia

Each chamber of commerce selected own approach to reach out to member companies and disseminate IMP's project information and call for cooperation. The Economic Chamber of Commerce and the Economic Chamber of North-West Macedonia decided that the best approach was to organize events where targeted member companies were invited while the Macedonian Chambers of Commerce decided to use their own direct approach reach out to member companies.

Two events were organized in cooperation with the Economic Chamber of Commerce, and one other event was co-organized by the Economic Chamber of Commerce and the Economic Chamber of North-West Macedonia. As result, more than 100 industrial companies learned about benefits and opportunities for cooperation with IMP.

5.1.4 Media

In cooperation with the Economic Chamber of Commerce, IMP presented the project to the media on March 25, 2013. The event was a 30-minute presentation led by Dragan Blazev, the Chief of Party and Danco Uzunov, the Project Packaging and Access to Finance Specialist. Promotional materials were disseminated to all media present on the event. More than 20 media organizations covered the event.

5.1.5 Potential Industrial Companies

The target group of potential industrial companies is SMEs in the country that operate industrial production plants across different industrial subsectors from food processing and beverages industry, building materials industry, metal and electrical industry, wood and furniture industry, paper industry, metallurgy, to chemical and leather industry.

Potential industrial companies were invited to join the project by use of various channels including chambers of commerce, printed and broadcasted media, and various energy-related events. IMP developed a questionnaire that was distributed to potential industrial companies by information dissemination or direct mailing.

5.1.6 Industry Analysis

IMP carried out an in-depth analysis of statistical data regarding present energy consumption specifics and trends as well as an overview of several specific macroeconomic indicators of the industrial sector in Macedonia. The analysis included a total of 10 industry sub-sectors, following the Macedonian National Classification of Activities (NKD) of the State Statistical Agency.

The main goal of the Industry Analysis was to provide baseline information regarding the current energy consumption specifics and trends coupled with an overview and analysis of several specific macroeconomic indicators of the industries in Macedonia. The specific objectives of the analysis were to:

- ✓ serve as a guidance – primary decision-making tool – for selection of pilot projects by the IMP;
- ✓ serve as a baseline of the Macedonian industry energy performance for further in-depth analysis to be carried out throughout the IMP implementation.

The Industry Analysis was primarily intended for use by the USAID and the IMP Team as a basic support and decision-making tool for further implementation of project activities. The analysis is strictly based on official statistical data and information regarding energy consumption, energy balances, macroeconomic indicators, etc. published by the State Statistical Office of Macedonia.

Within the scope of the statistical data analysis and based on a set of independent energy and economic criteria, two major groups of industries were identified, selected and prioritized in: (i) four high, and (ii) three medium ranked industry (sub)-sectors that are of further interest for the IMP, and form the basis for pilot projects/companies selection. The following matrix summarizes the selected industries and their sub-industry structure.

Table 2: Industry Analysis – Selected industries and their sub-industry structure

Glass, Pottery & Building Materials	Manufacture of glass and glass products, refractory products, clay building materials, manufacture of other porcelain and ceramic products, cement, lime and plaster and manufacture of articles of concrete, cement and plaster.
Textile, Leather & Clothing	Manufacture of textiles, preparation and spinning of textile fibres, weaving and finishing of textiles.
	Tanning and dressing of leather, manufacture of luggage, handbags, saddleryand, harness, dressing and dyeing of fur and manufacture of footwear.
	Manufacture of wearing apparel, except fur apparel, manufacture of articles of fur, and manufacture of knitted and crocheted apparel.
Food, Beverage & Tobacco	Processing and preserving of meat and production of meat products, processing and preserving of fish, crustaceans and molluscs, fruit and vegetables, manufacture of vegetable and animal oils and fats, manufacture of dairy products, grain mill products, starches and starch products, and manufacture of bakery and farinaceous products.
	Manufacture of beer, malt, wine and non-alchocolic beverages.
	Manufacture of tobacco products.
Other Industries	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials, manufacture of rubber and plastic products, manufacture of fabricated metal products, except machinery and equipment, manufacture of computer, electronic and optical products, electrical equipment, machineryand equipment, manufacture of motor vehicles, trailers and semi-trailers, and manufacture of furniture.
I. Medium Ranked	
Chemical Industry	Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms, manufacture of pesticides and other agrochemical products, manufacture of paints, varnishes and similar coatings, printing ink and mastics, soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations, and manufacture of man-made fibres.
	Manufacture of basic pharmaceutical products and pharmaceutical preparations.
Ore Extraction	Mining of iron ores and non-ferrous metal ores, quarrying of stone, sand and clay, and support activities for petroleum and natural gas extraction.
Paper & Printing	Manufacture of pulp, paper and paperboard, and articles of paper and paperboard.
	Printing and service activities related to printing and reproduction of recorded media

The interest of IMP support and implementation to industrial companies is also strengthened by the electricity market liberalization in the country. Although the electricity market liberalization was initially postponed and scheduled on April 1, 2014, this process triggered several industrial companies to express interest for introducing EMS by USG cost-sharing support, due to the fact that IMP offered support to their efforts to manage, measure, plan and balance energy use in their production facilities.

5.1.7 Company Selection

IMP selected 53 potential industrial companies based on companies' expressed interest and partners' knowledge of potential industrial companies in the country. The industry analysis and findings were used as a framework of selecting the potential companies from different industrial subsectors.

5.2 Demonstration projects

The development of demonstration projects is the key component under the Industrial Management Project. Based on the industry analysis conducted under Component 1 in 2013, the IMP team defined a pool of 53 companies as potential Energy management Systems beneficiaries. Initially, the project team organized several workshops in close cooperation with the chambers of commerce to present and discuss project potentials to more than 100 industrial companies. As result of expressed interest from companies, the IMP team screened the companies for ownership, business practices and profitability, as well as conducted on-site visits and discussed with owners or management representatives their interest and understanding for project inclusion. The screening included companies' abilities to cost-share energy management projects and their willingness to share energy use and savings data with the project team and to present to other potential beneficiaries on IMP organized events. Following the screening and approval of potential companies, a team of project engineers developed technical plans and cost specifications for total of 17 companies. The table below shows the companies that expressed initial interest for EMS supply and installation and were approved by IMP for screening, on-site surveying and preparing detailed EMS cost specifications.

Table 3: Developed detailed EMS cost specifications for industrial companies in 2013[1]

#	Company	Location	Number of measurement points	Total EMS cost specification (VAT excl.) US Dollars	Status
1.	Alkaloid	Skopje	22	41,366	Contract signed.
2.	Bato and Divajn	Skopje	21	42,931	Company declined.
3.	Brako	Veles	45	64,005	Company declined.
4.	Comfy Angel	Prilep	32	54,925	Company declined due to ongoing investments; To be reviewed next year.
5.	Cable Factory	Negotino	40	58,444	Decision pending.
6.	Frotireks	Skopje, Strumica	15	34,093	Company declined.
7.	Frotirka	Delcevo	25	46,800	Company declined.
8.	Hi-Tech Corporation	Oreshani (Skopje)	22	37,012	Contract signed.
9.	Knauf Radika	Debar	45	48,190	Contract signed.
10.	Konti Hidroplast	Gevgelija	28	49,539	Company declined.
11.	Makprogres	Vinica	28	54,313	Contract signed.
12.	Pelagonija Separacija	Gostivar	9	25,868	Company declined.
13.	Promes	Skopje	13	29,650	Contract signed.
14.	Specijal Product	Skopje	13	36,706	Contract signed.
15.	Vardar Dolomit	Gostivar	18	48,779	Company declined.
16.	Vivaks	Skopje	13	27,358	Contract signed.
17.	Zhito Oriz	Kochani	16	33,887	Company declined.

[1] Note: Exchange rate 1€=61.5 Denars; US Dollars average exchange rate 1USD=45.00 Denars

IMP engineers conducted set of activities to prepare detailed EMS cost specifications in the companies listed above. Activities included:

- Conducted energy consumption analysis (electricity and other energy consumables) in industrial companies;
- Performed on-site surveying of existing energy infrastructure network utilizing electricity and other energy consumables;
- Prepared technical documentation for the energy infrastructure network including single line diagrams, distribution panel boards and connections to consumers; technical data were communicated with and approved by technical staff from candidate industrial companies;
- Prepared technical solutions for EMS and its configurations including measurement and data acquisition devices and telecommunication equipment;
- On-site visit to all locations including selection of possible places for installation of EMS measurement and telecommunication equipment;
- Prepared scope of work with detailed cost specification for each EMS and submitted for companies' consideration.

Out of 17 candidate companies where detailed EMS cost specifications were prepared, 7 companies signed contracts with IMP for EMS implementation in 2013.

Additionally, more than 30 companies were approached and initial meetings were held with management representatives and technical personnel. Companies included:

- Building materials industry: Mermeren Kombinat Prilep, Soloprom, Korab Mermer Gostivar, Rehau, IGM Dzumajlija
- Iron and steel industry: LTH Learnica, MZT Learnica, Ariljemetal
- Food and beverages industry: Koro Company, Zdravje Radovo, Blagoj Gjorev, Vitaminka, Evropa, Veze Sharri, MIS Globus, Pekabesko, Brilijant, Swislion MAK, Ideal Shipka, Agria, Vipro, Cheza Komerc, Buchen Kozjak, Joka Strumica, Rimes
- Metal and electrical industry: Rade Konchar TEP, Wabtec MZT
- Wood and furniture industry: Zona Mebel, Mebel Vi
- Other industries: Tehnicki Gasovi

In the last quarter of 2013, IMP started to install cost-shared energy management systems and to provide on-site training to plant managers and technical staff tasked with energy-management related activities.

The table below shows activities for implementation of contracted industrial companies in 2013 that are scheduled for completion in the first quarter of 2014 as indicated below.

Table 4: Status of Contracted EMS Implementation in 2013

#	EMS Project Beneficiary	Location	Contracted value (VAT Excl.)	USAID cost-share (VAT Excl.)		Beneficiary cost-share VAT Excl.)	EMS System Integrator
			€	USD	€	€	
1.	Hi-Tech Corporation	Oreshani (Skopje)	27,623.85	18,506.00	13,811.93	13,811.93	Loging Electronics, Skopje
2.	Alkaloid AD	Skopje	30,765.33	20,000.00	14,874.80	15,890.54	Iring. Skopje
3.	Makprogres	Vinica	39,908.85	20,000.00	14,695.93	25,212.91	Iring. Skopje
4.	Specijal Product	Skopje	26,971.00	18,353.00	13,485.50	13,485.50	Iring. Skopje
5.	Promes	Skopje	21,786.70	14,825.00	10,893.35	10,893.35	Iring. Skopje
6.	Knauf Radika	Debar	35,065.07	20,000.00	14,552.85	20,512.22	Loging Electronics, Skopje
7.	Vivaks	Skopje	19,835.97	13,679.21	9,917.98	9,917.98	Iring, Skopje
Total:			**201,956.77**	**125,363.21**			

Note: 1€=61.50 Denars

Status of EMS project implementation:

1. Project to be completed and commenced by end of January 2014.
2. Project to be completed and commenced by end of January 2014.
3. Project to be completed and commenced by end of February 2014.
4. Project to be completed and commenced by mid February 2014.
5. Project to be completed and commenced by mid February 2014.
6. Project to be completed and commenced by mid February 2014.
7. Project to be completed and commenced by mid March 2014 (subject to readiness of new industrial plant).

In 2013 IMP concluded that most visited candidate companies own out-of-date power distribution installation built from 30 to 40 years ago and generally utilize old equipment. About 60% of selected candidate companies do not have any local area network, which is necessary for EMS operation. Such conditions increase EMS investment cost in companies. Moreover, all screened companies lacked technical project documentation for existing and running power distribution networks, installed equipment and for the overall energy installations. Therefore, increased level of effort was invested to prepare project plans and cost specifications for cost-shared EMS. In addition, the team concluded that maintenance of energy installations in candidate companies is relatively poor or insufficient and that they do not have sufficient trained or qualified personnel for it.

The target for EMS contracts in 2013 was 10 industrial companies; however, IMP signed 7 contracts with pilot companies which implementation started in 2013 and is expected to end in the first quarter of 2014. On the other hand, the number of companies that expressed interest and received cost specifications and project plans for EMS implementation as result of project intervention was higher than planned and budgeted. Although the project team and design engineers were proactive in reaching the project objectives with increased level of effort, we identified that in a number of cases the top management does not prioritize energy management practices and that there is a lack of management commitment in activities that lead to reducing energy consumption and cutting energy costs.

Namely, it is critical that any effective energy management system has a full commitment of top management of any organization. In order to get their full commitment and support it was important to convince top management that having an EMS is an advantage for the organization. The project team explained the benefits - energy savings, cost savings, production improvement, etc. by using data and information on:

- trends on energy use, energy costs and other energy related issues
- savings data estimations from available sources including statistics from developed countries
- on-line software demonstration by vendor's representative including demonstration of other real-time running EMS systems
- other benchmarking data and project materials
- explanation that having EMS does not mean that other organizational priorities are compromised

Picture 3: Acceptance of Energy Management/Monitoring System in Hi-Tech Corporation

The top management commitment was usually demonstrated in discussions with owners or management representatives and submission of filled questionnaire. Full top management commitment was granted at 17 companies where IMP conducted detailed on-site investigations, collected technical input data, prepared project plans, and submitted detailed cost specifications. However, 7 out of the 17 companies signed contracts for EMS implementation which continue to be implemented in 2014. This caused some of the activities that were planned for accomplishment in 2013 to shift in 2014.

Picture 4: Acceptance of EMS in Alkaloid AD Skopje

5.3 Training and Sector Development

Under this component, IMP is tasked to aid develop the market of local service providers for EMS development, installation and maintenance services.

In order to select two local engineering companies to receive training, IMP conducted market research on potentials and expertise of local engineering companies that are closely related to Energy Management Systems services. Information about companies was collected from several sources including:

- Companies that expressed interest at past conducted seminars where the IMP team presented the project and discussed opportunities for EMS implementation by USAID cost-sharing support
- CEED database of Small and Medium sized companies
- Local web-based directories including Golden Pages (www.zk.com.mk)
- Partner's knowledge on local engineering market

A pool of 16 local engineering companies with experience related to EMS installation services were identified and invited to express interest by the end of December 2013. Only two local companies, Energoproekt MI-GO and Filbis expressed their interest and delivered the requested filled-in questionnaire. Both companies have knowledge and experience in engineering services that are closely related to EMS services, in particular:

Energoproekt MI-GO's core business is design, installation and supervision of electrical installations. The company is based in Skopje and it was established in 2012. Activities include electrical installations in hospitals, municipal projects, alarming systems, and energy monitoring systems. The company seeks opportunities for expansion and growth and considers Energy Management Systems to provide great opportunity for development.

FILBIS's main operations are related to design of energy installations including gas installations, design of industrial processes and installations, storage of liquid fuels and gas (CNG, LNG, LPG, oil, etc.). The company's portfolio includes design of HVAC systems, geothermal installations, solar panels, biomass, and energy efficiency upgrade projects. Filbis is based in Skopje and it was established in 1998. The company looks for opportunities to increase sales and introduce new business processes in their core operations.

Since both companies met the criteria of organizations that have market development and growth perspective, they were selected for training.

The training process of the local engineering companies consists of theoretical training and practical on-site training.

The objectives of the overall training are to:

- ✓ introduce the trainees with the USAID Industrial Management Project,
- ✓ familiarize the trainees with the Energy Management System (EMS) concept in an industrial company as well as with the basis of the ISO 50001:2011 Energy Management Standard including introduction of its methods, requirements and scope of use;
- ✓ Introduce the practicalities and applicability of Energy Management Systems (hardware equipment and software solutions) by selected vendors of Schneider Electric based in France and Janitza based in Germany. The Energy Management Systems shall be integrated in the pilot companies by the local system integrators: Iring company, licensed by Schneider Electric, and Loging Electronics company, licensed by Janitza.
- ✓ elaborate the planning and development process of Energy Management Systems at industrial pilot companies by monitoring systems' operation.
- ✓ train companies on preparation of project technical documentation for EMS implementation;
- ✓ provide hands-on experience on installation of metering and telecommunication equipment in power distribution networks and facilities, installation of computer equipment for EMS on site at industrial pilot companies; and
- ✓ participate in installation, programming and setting parameters, including participation of a complete User's adaptation of energy management software at industrial pilot companies.

The full training of the two selected local engineering companies shall be conducted by mid-2014.

Furthermore, the two selected companies shall take responsibility to report on annual energy cost, energy consumption and GHG emissions for the energy management and energy efficiency projects which they have undertaken in other industrial companies in the country throughout IMP's duration.

5.4 Outreach

The outreach component used a variety of communication and outreach tools, including holding public events and workshops, producing and disseminating information via promotional materials and interviews. Press releases and press clippings about IMP's work when applied were regularly submitted to USAID.

5.4.1 USAID – UNIDO cooperation on USER Training workshop

IMP established a close cooperation with UNIDO team during their country's mission in early July 2013. The UNIDO is expected to start another industrial energy efficiency project in Macedonia in May 2014. The local partner to UNIDO project in the country is the Regional Environmental Center (REC).

In October 2013, IMP and UNIDO conducted a two-day joint workshop where 27 participants representing 20 non-participant industrial companies attended the training.

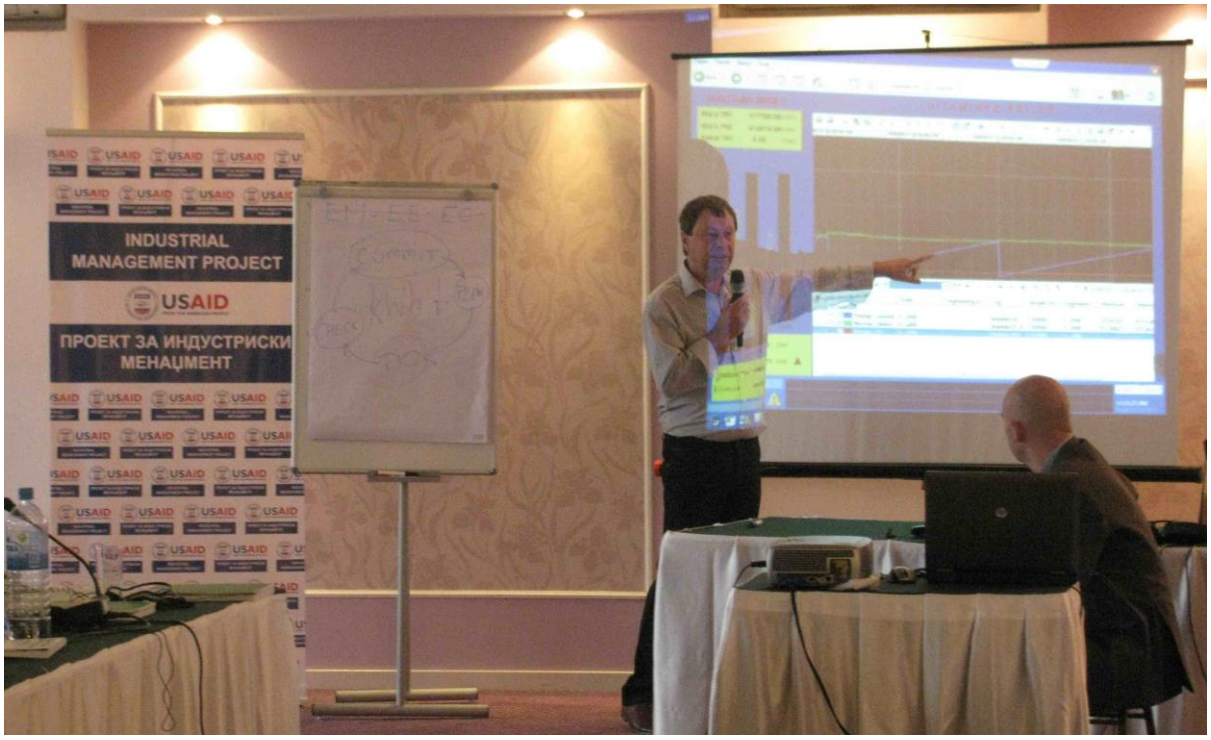
Picture 5: USER Training workshop – Skopje, October 8-9 2013

The objectives of the training were to:

- introduce the participants with the USAID Industrial Management Project,
- provide overview of ISO 50001 Energy Management System
- discuss building management commitment
- develop energy information and plans

- introduce basic concepts of project financing
- present energy metrics and energy performance indicators
- explain implementation and operation methods under the standard
- discuss checking, management review and project planning
- show use of tools and online ads
- perform simple financial analysis to compare projects
- present energy management systems from selected vendors Schneider Electric and Janitza under the USAID Industrial Management Project

The target audience was representatives from industrial companies that have potential for energy conservation measures and interest to introduce energy management systems in their production plants.



Picture 6: EMS integrator presents its software to participants in the workshop

IMP provided training materials to all participants which included all presentations from the workshop. In addition, all participants received the *Practical Guide for implementation of Energy Management System* and Excel toolkit, which were prepared and translated by IMP in cooperation with UNIDO.

5.4.2 Training of financial institutions

The one-day training on energy management in industrial companies aimed for financial institutions was held in the premises of CEED Macedonia on October 30, 2013. Representatives from three financial institutions attended the training (Ohridska Banka, NLB Tutunska Banka, and NLB Leasing).

The tailor-made training workshop for financial institutions provided insights on the following aspects:

- ✓ Types of industrial energy management projects
- ✓ General technical considerations of industrial energy management projects
- ✓ Importance of energy use data acquisition and in-depth data analysis
- ✓ Energy efficiency/management technology considerations
- ✓ Specific energy management project-related sensitivity and risk assessment and management
- ✓ Overall financial considerations and profitability expectations from financing of energy management projects and
- ✓ ISO 50001 principles and guidelines.

The purpose of the training was two-fold. First, to familiarize the participants with the Energy Management System (EMS) concept, discuss opportunities for project financing aspects of energy efficiency improvements in industrial companies, and introduce basic concepts of ISO 50001:2011 Energy Management Standard. Second, to establish relationship with the banks as potential clients to IMP's pilot companies for financing energy efficiency upgrades in their production facilities, which are expected to follow after EMS implementation.

Picture 7: Training of financial institutions – Skopje, October 30 2013

IMP has identified several financing facilities that intend to target when assisting pilot companies in access to finance. Representatives on the training already had experience with financing facilities, the USAID Development Credit Authority (DCA) and the Western Balkans Sustainable Energy Credit Line Facility.

Below is a short description of the financing facilities that are available and accessible on the local market and that directly finance opportunities to local companies.

UNI BANK AND NLB LEASING (USAID DCA FACILITY)

The Development Credit Authority (DCA) facility was established by USAID as a loan portfolio guarantee program to provide a fifty percent guarantee of the guaranteed ceiling thus sharing the risk with partner banks, UNI Banka and NLB Leasing. The facility targets Small and Medium-size Enterprises in the country, municipalities and residential end-users. The maximum loan amount per single borrower is $400,000 with a loan repayment period up to 5 years. The total facility is in excess to $10 million.

EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT

In 2013, EBRD launched the WeBSEFF II (Western Balkan's Sustainable Energy Financing Facility) as a regional financing facility of €75 million under which it provides credit lines to participating financial institutions (PFI) in Bosnia and Herzegovina, Croatia, Macedonia and Serbia who on-lend the funds to businesses and municipalities (sub-borrowers) wanting to invest in two key areas: energy efficiency improvements and small-scale renewable energy. The facility finances up to €2 million per project.

The facility is supported with technical cooperation services, and a performance based incentive system which is designed to address specific barriers depending on the sector and type of investment. The Sub-borrowers are eligible to receive an incentive payment calculated as a percentage of the Sub-loan amount. The private sector borrowers are to receive up to 10% incentive payment while municipalities up to 15%.

Eligible borrowers that can apply for financing under this Framework will be private sector companies for energy efficiency and renewable energy projects, Energy Service Companies (ESCOs) for private and public sector energy efficiency investment implementation, municipalities and municipal utilities and public building owners for energy efficiency (including small renewable energy investments in public buildings). The facility is scheduled to end by mid-2017.

KFW FINANCING FACILITY

In 2009 the Procredit Bank launched "Eco" loans to promote financing of energy efficiency projects and renewable energy projects. The Eco loans are provided to enterprises and households to finance investments with an incentive of 1% lower interest rate than the bank's standard terms.

To support energy efficiency and renewable energy project development, the German bank KfW undertook to refinance projects for renewable energy and energy efficiency to Macedonian banks. Under this objective, at the end of 2010 the local ProCredit Bank signed a KfW loan for a total amount of about EUR 7 million to be used for financing energy efficiency and renewable energy projects undertaken by SMEs and private households with up EUR 2 million per single borrower. In addition, KfW is providing a technical assistance to the bank in introducing the new loan product by providing targeted training to bank's staff and thus helping to raise the overall awareness. The average anticipated loans for energy efficiency and renewable energy projects at this bank is in range from $15.000 to $130.000.

GREEN FOR GROWTH FUND

Green for Growth Fund (GGF) is a unique public-private partnership established in December 2009 to promote energy efficiency in its target region and to reduce CO2 emissions. GGF's investments seek to achieve a 20% reduction in energy consumption and/or a 20% reduction in CO2 emissions. The mission of the Green for Growth Fund Southeast Europe (GGF) is to contribute to enhancing energy efficiency and fostering renewable energies in its thirteen Target Partners including Macedonia, Bosnia and Herzegovina, Croatia, Albania, Montenegro, Serbia, and Kosovo. This mission is reached predominantly through the provision of dedicated financing to businesses and households via partnering with financial institutions and direct financing.

In light of the expected development of the Fund's investment portfolio GGF foresees the initiation of financing projects beginning of March 2014. Investors and contributors include the EBRD, IFC, and Germany, supported by the European Commission.

5.4.3 Other Outreach Activities

Nova TV Profit series on Industrial Management Project and Improving Industrial Energy Efficiency

On May 9, 2013, Dragan Blazev, COP and Danco Uzunov, project packaging and access to finance specialist had interviews for the Nova television series. Both interviews took about 60 minutes where the team members discussed energy efficiency improving aspects in industrial companies in the country. In fact, they presented the USAID industrial management project describing its components including demonstration of several examples and case studies to support the industrial energy management concept.

Mega interview in Economy and Business monthly magazine

In mid-July 2013, the COP Dragan Blazev was invited by the management that prepares the monthly magazine "Economy and Business" to discuss energy sector development in the country and opportunities for improvement. In his mega interview for the month of July, Dragan Blazev discussed the energy related condition in the country including resources, potentials and accomplishment as well as provided suggestions for energy sector development.

Picture 8: CoP Dragan Blazev in Economy and Business monthly

Project launch event

The main purpose of the launch event organized at the Holiday Inn Hotel in Skopje on December 4, 2013 was to officially announce in public the start of the two complementary USAID projects in the energy efficiency sector and renewable energy: the USAID Industrial Management Project (IMP) and the USAID Clean

Environment Investment Project (CEI), and to introduce projects' goals, activities and potential areas of cooperation to relevant stakeholders, Government of Macedonia, Ministers and Agency heads, private sector companies, chambers of commerce, professional associations and the broader Macedonia public. More than 120 representatives of business community, government institutions as well as international organizations were present at the event. The projects' goals and activities over the three-year period were also presented.

Picture 9: Project launch – Holliday Inn Hotel, December 4 2013

This event was well received by GoM representatives, business sector, international organizations, and the general public.

6 PROJECT MANAGEMENT

IMP was conducting activities as per the approved first-year Work Plan. After preparing an in-depth analysis of industrial sector and prioritizing industrial subsectors, the biggest focus was put on discussion with management boards of industrial companies followed by on-site screening and conducting walk-through audits at selected candidate companies that showed clear interest for EMS implementation. Considering that candidate companies lacked project documentation and often did not have relevant technical staff under payroll, the team enhanced by engineers and industrial

experts put extra effort to screen and prepare EMS project plans and detailed cost specifications. The overall activities were closely monitored and coordinated from the main project office.

The team focus was to deliver best results within time and with quality. Therefore, all planning, organizing and controlling were done to meet the specific objectives as included in contracted milestones.

The primary challenge of project management was to achieve all of the project goals and objectives while honoring all conditions and constraints.

7 PERFORMANCE MONITORING AND EVALUATION

The Industrial Management Project carries out continuous monitoring in order to ensure systematic assessment of the performance and progress of IMP interventions toward achievement of results. The IMP monitoring efforts tracks the technical assistance and resulting outcomes from IMP activities aimed to increase competitiveness of industrial companies through reduced production (energy) costs and to reduce GHG emission on a long-term basis. The Information obtained from the monitoring activities provides the project's management with an indication of the degree of project progress and is used as a basis for decision making and taking action in order to timely achieve the anticipated project results.

The monitoring process incorporates different methods to measure the outputs, outcomes and impact of IMP activities, such as structured questionnaires, surveys, regular visits and maintenance of good relationship with client companies, updated company profiles, etc. Once the necessary data is collected and analyzed, the project will produce different types of reports and statistics for presentation of the results.

7.1 IMP progress against Performance Monitoring Plan (PMP) Targets

In order to perform more efficient and effective monitoring, IMP developed a Performance Monitoring Plan that provides summarized information on the project components and deliverables, indicators for achievement, their definition, unit measure, disaggregation, data source and collection methods, timing and frequency of data collection, methods of analysis, and targets to be achieved. The project activities outlined in this report are organized around these measurable project performance indicators.

A review of the project's PMP indicators and the progress made in 2013 is provided below:

Number of new jobs *(monitoring only)* - This indicator will be tracked for monitoring purposes only. IMP will record the number of new jobs created (full/part time, long/short term) in the beneficiary companies as a result of the project's interventions.

1. **Percentage of reduced GHG emissions as a result of USG assistance** - The reduction in GHG emissions by pilot companies before and after the USG assistance will be measured and recorded on annual basis. This indicator will be measured in percentage after the implementation of energy efficiency measures, as a comparison between the actual and baseline GHG emissions.

2. **Number of visited companies that expressed interest for EMS implementation** – The project visited a number of companies that expressed interest to participate on the project and thus, submitted filled in questionnaire. 17 companies received cost specifications & project plans for EMS implementation in 2013.

3. **Number of companies that successfully install EMS as a result of USG assistance and cost-sharing** – This indicator defines the number of companies that signed contract for EMS installation as a result of USG technical assistance and cost-sharing. In 2013, 7 companies have signed contracts with IMP for EMS supply and installation.

4. **Percentage of electricity savings in pilot companies** – The electricity savings in assisted companies, measured as percentage of electricity savings before and after measures, will be reported on annual basis after pilots' implementation. This indicator will be calculated as percentage i.e. ratio of electricity savings after implementation and baseline condition.

5. **Value of investments for installation of EMS as a result of USG assistance** – The investments made for development and installation of EMS in selected companies as a result of USG technical assistance and cost-sharing will also be measured annually. In 2013, the total contracted value amounts to $276,000.

6. **Number of non-participant companies that received training on Energy Management, ISO 50001 and EE best practices** – IMP will provide training to industrial non-participant companies on industrial energy management and ISO 50001 including best practices learned from demonstration projects. Non-participant companies are industrial companies from different industrial branches that meet criteria from IMP industrial analysis prepared during the project inception phase. In 2013, 27 participants from 20 non-participant industrial companies participated in training for industrial energy management and ISO 50001 concepts.

7. **Number of person-days of training on Energy Management services for local engineering companies (LEC)** - During the project implementation two local engineering companies will receive at least 30 person-days (each) of training and practical experience on energy management project preparation, energy management system installation and maintenance and energy use data collection. A person-day is defined as 6 hours a day. The training will include theoretical and practical part. This indicator will be measured the second year of project implementation.

Table 5 below provides an overview of IMP targets and performance to date. The project will continue to track indicators and to provide and record the updates.

Table 5: PMP Summary Table – Targets and Results in 2013

#	Performance Indicator	Descriptioin	2013		2014		2015		TOTAL	
			Targeted	Actual	Targeted	Actual	Targeted	Actual	Targeted	Actual
1	Percentage of reduced GHG emissions as a result of USG assistance	Percentage of reduced in GHG emissions by pilot companies before and after USG assistance, as a comparison between actual and baseline GHG emissions.	0%	0%	3%		7%		7%	
2	Number of companies that expressed interest for EMS implementation	Number of companies that expressed interest and received cost specifications & project plans for EMS implementation as result of project intervention.	15	17	10		0		25	
3	Number of companies that successfully install EMS as a result of USG assistance and cost-sharing	Number of companies that signed contract for EMS installation as a result of USG assistance and cost-sharing.	10	7	7		0		17	
4	Percentage of electricity savings in pilot companies	Electricity savings in assisted companies measured as percentage of energy savings before and after measures. Weighted average of operational pilot projects.	0%	0%	3%		7%		7%	
5	Value of investments for installation of EMS as a result of USG assistance	Investments made for installation of EMS in selected companies as a result of USG technical assistance and cost-sharing	$350,000.00	276,000.00	$250,000.00		0.00		$600,000.00	
6	Number of non-participant companies that received training on Energy Management, ISO 50001 and EE best practices	Number of industrial non-participant companies that received training on industrial energy management and ISO 50001 including best practices learned from demonstration projects.	5	20	20		20		45	
7	Number of person days of training on Energy Management services for local engineering companies (LEC)	Number of person days of training and practical experience on energy management project preparation, energy management system installation and maintenance and energy use data collection that local engineering companies received.	0	0	60		0		60	

Note: Exchange rate 1USD=45.00 Denars